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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,176	03/29/2001	Chien Ping Huang	55776	9088
21874	7590	04/07/2005	EXAMINER	
EDWARDS & ANGELL, LLP			GEBREMARIAM, SAMUEL A	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	

2811

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,176

Applicant(s)

HUANG ET AL.

Examiner

Samuel A. Gebremariam

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim US patent No. 5,925,934 in view of admitted prior art (APA).

Regarding claim 1 Lim teaches (figs. 10A and 11, col. 7, line 21-26) a substrate strip, which comprises: (a) a frame (570) having a pair of parallel supporting bars including a first supporting bar and a second supporting bar (see fig. 11, (570) runs parallel), and (b) at least one substrate (505 chip includes a substrate) supported on the supporting bars; the substrate being linked to the supporting bars by means of no more than two external tie bars (530).

Lim does not teach that at least one external tie bar is arranged on a corner of the substrate.

APA teaches forming external tie bars (13a-13d) at the corner of a substrate (11) (refer to fig. 1B).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form one of the tie bars at the corner of the substrate as taught by APA in the structure of Lim in order to ease the production process.

Regarding claim 2, Lim teaches substantially the entire claimed structure of claim 1 above including the substrate is dedicated for BGA application (fig. 10A).

Regarding claim 3, Lim teaches (fig. 10a) substantially the entire claimed structure of claim 1 above including the substrate is linked to the frame by means of just two tie bars (530).

Regarding claims 9-10 Lim teaches (fig. 11, col. 7, line 21-26) substantially the entire claimed structure of claims 1-3 above including the substrate (505) being linked to the supporting bars by means of a two-point linkage structure consisting of just two tie bars (530) linked to the supporting bars (570).

Regarding claims 4 and 5 and 11-12 Lim teaches substantially the entire claimed structure of claim 1 above including that the two tie bars are arranged on two adjacent corners of the substrate (fig. 22).

Lim does not teach that the two tie bars are arranged on diagonally opposite corners of the substrate.

A skilled artisan would readily recognize that placing support structures on a mechanical system diagonally or any two relative positions other than the mid points of opposite side of the support frame taught by Lim would provide equally good support and stability. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the two tie bars as claimed above, since placing the tie bars diagonally provides better support to the substrate.

Claims 7-8 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim, APA and in view of Park et al. US patent No. 5,847,446.

Art Unit: 2811

Regarding claim 7 Lim teaches substantially the entire claimed structure of claim 1 above except explicitly stating that the substrate is linked to the frame by means of just one tie bar.

Park teaches (col. 4 line 22-34, figs. 3-5) the possibility of using at least one tie bar (122) that is attached to the chip pad (120).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the one tie bar structure taught by Park in the structure of Lim in order to simplify the manufacturing process.

Regarding claim 8, Lim teaches substantially the entire claimed structure of claim 1 above except explicitly stating that the just one tie bar is arranged on the substrate's gating corner.

Admitted prior art teaches (fig. 1B) using the upper left tie bar 13a for providing a gate for injecting encapsulation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to situate the one tie bar structure taught by Lim and Park in the substrate gating area in order to simplify the manufacturing process.

Regarding claims 14-16, Lim teaches substantially the entire claimed structure of claims 1-8 above except explicitly stating that the substrate being linked to the supporting bars by means of an external one-point linkage structure consisting of just one tie bar linked to the supporting bars.

Park teaches (col. 4 line 22-34, figs. 3-5) the possibility of using at least one tie bar (122) that is attached to the chip pad (120).

Art Unit: 2811

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the one tie bar structure taught by Park in the structure of Lim in order to simplify the manufacturing process.

Response to Arguments

3. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Admassu Gebremariam whose telephone number is 703 305 1913. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Samuel Admassu Gebremariam
April 4, 2005


EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800